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PATENT & TRADEMARK OFFICE

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

Atty Dkt. 2380-289
C# M#

Parkvall et al.

TC/A.U.: 2662

Serial No. 09/742,283

Examiner: Sefcheck, G.

Filed: December 22, 2000

Date: June 27, 2005

Title: SCHEDULING TRANSMISSION OF DATA OVER A TRANSMISSION CHANNEL BASED ON SIGNAL QUALITY OF A RECEIVER CHANNEL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐	<u>NOTICE OF APPEAL</u> Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner twice/finally rejecting applicant's claim(s).	$500.00 (1401)/$250.00 (2401)	$
☒	An appeal **BRIEF** is attached in the pending appeal of the above-identified application	$500.00 (1402)/$250.00 (2402)	$ 500.00
☐	Credit for fees paid in prior appeal without decision on merits		-$ ( )
☐	A reply brief is attached.		**(no fee)**
☐	Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s)	One Month Extension $120.00 (1251)/$60.00 (2251) Two Month Extensions $450.00 (1252)/$225.00 (2252) Three Month Extensions $1020.00 (1253/$510.00 (2253) Four Month Extensions $1590.00 (1254/$795.00 (2254)	$
	☐ "Small entity" statement attached.		
	Less month extension previously paid on		-$( )
		TOTAL FEE ENCLOSED	$ 500.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any <u>deficiency</u>, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.** A <u>duplicate</u> copy of this sheet is attached.

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Before the Board of Patent Appeals and Interferences

BRIEF FOR APPELLANT
On Appeal From Final Rejection
From Group Art Unit 2662

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* *

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APPEAL BRIEF

Sir:

I. REAL PARTY IN INTEREST

The real party in interest is the assignee, Telefonaktiebolaget L M Ericsson (publ), a Swedish corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals related to this subject application. There are no interferences related to this subject application.

III. STATUS OF CLAIMS

Claims 1-5, 8-18, 21-28, 30-32, 34-43, and 46-50 are pending. Claims 1-4, 10, 14, 16, 26-28, 31, 34, 35, 38, 39, and 41 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent 5,991,286 to Labonte et al. in view of U.S. Patent 6,226,283 to Neumiller. Claims 1-5, 8-18, 21-28, 30-32, 34-43, and 46-50 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent 6,522,888 to Garceran et al. in view of U.S. Patent 6,226,283 to Neumiller.

IV. STATUS OF AMENDMENTS

In the after-final submission on April 25, 2005, Applicants incorporated the features of certain pending dependent claims into the independent claims to simplify the issues for appeal by reducing the number of claims being appealed and by correcting the dependencies of claims 8, 9, 21, 30, and 46 so that they did not depend from claims that had been canceled. The Examiner refused entry. Accordingly, the appeal is based on the claims as finally rejected with the dependencies as assumed by the Examiner on page 2 of the final action.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed subject matter relates to scheduling transmission of data over a transmission channel based on signal quality of a receiver channel. In digital data communications systems, it is common for data packets transmitted over a communications channel to be corrupted by errors, e.g., when communicating in hostile

environments. Wireless radio communications are often conducted in an especially hostile environment. The radio channel is subjected to a barrage of corrupting factors including noise, rapidly changing communications channel characteristics, multi-path fading, and time dispersion which may cause intersymbol interference, and interference from adjacent channel communications.

So it is desirable to have a reliable data delivery service that guarantees delivery of data units sent from one radio to another without data duplication or data loss. Most reliable data delivery protocols use a retransmission technique called Automatic Repeat reQuest (ARQ) where the receiver of the data responds to the sender of the data with acknowledgements and/or negative acknowledgements. Coded data packets are transmitted from a sender to a receiver over a communications channel. Using error detection bits included in the coded data packet, each received data packet is processed by the receiver to determine if the data packet was received correctly or corrupted by errors. If the packet was correctly received, the receiver transmits an acknowledgement (ACK) signal back to the sender. Some example ARQ schemes are shown in Figures 1-4.

There are situations where it is desirable to have an ARQ protocol running between a radio base station and a mobile radio user equipment (UE) rather than between a radio network controller (RNC) and the UE. For example, data transmission rates can be increased by locating the ARQ retransmission mechanism as close to the radio interface as possible, thereby reducing delays associated with internal signaling in the radio access network between an RNC and two or more base stations (BSs). If the ARQ

protocol resides in the base station, the ARQ feedback signaling carrying acknowledgments and/or retransmission requests from a UE terminates much faster in the base station. The BS-RNC signaling load is also decreased.

While the downlink radio channel quality is particularly relevant for scheduling downlink data packet transmissions from BS to UE, the uplink radio channel conditions from UE to BS are also relevant for scheduling purposes, particularly when an ARQ type protocol is used. Indeed, sending data packets on the downlink channel when the uplink radio channel conditions are poor may well mean that ARQ feedback signals from the UE to the base station will be corrupted or even lost as a result of the unfavorable uplink radio channel conditions.

Soft handover also must be considered. When the UE is located close to a border between cells, the same uplink data transmission from the UE is usually received by two or more base stations. In "soft" handover, the best of the uplink data transmissions is selected or they are combined in an RNC. ARQ protocols perform well as long as the ARQ feedback signals reach the entity handling the ARQ protocol. If the ARQ protocol is located in the RNC, soft handover is not a problem because different uplink ARQ feedback signals are all received by the RNC. On the other hand, if the ARQ protocol is located in the base station, soft handover creates problems because there is no guarantee that ARQ feedback signals will reach the specific base station actually handling the downlink transmission.

The solution presented by the inventors is to selectively transmit traffic in over a channel in one direction, (e.g., downlink), when a channel in the opposite direction, (e.g.,

uplink), is of sufficient quality to assure a reasonable or high likelihood that the transmitter will accurately receive and decode feedback or other messages, (e.g., ARQ messages). See Figure 7.

In a preferred example embodiment, an ARQ protocol for the downlink communication to the UE is handled in the base station. The condition of the uplink channel must be good enough for the base station to accurately receive an ARQ feedback signal from the UE. For an insufficient quality uplink channel condition, the BS scheduler may delay transmission of data packets to a UE over the downlink channel and assign the shared downlink channel to another UE until the quality or condition of that uplink channel exceeds a predetermined threshold, e.g., a bit error rate, a signal-to-interference ratio, etc.

By taking into account the quality of the uplink channel from the UE, the transmitting base station BS1 ensures that it receives ARQ feedback signals. This is particularly important if the user equipment is in soft handover. See Figure 8. Even if another base station BS2, which is not transmitting the downlink data to the UE, momentarily happens to have a better uplink channel than the base station BS1, BS1 ensures that it will receive any feedback signal by controlling the timing of the downlink transmission.

The base station may also detect a predetermined condition, which although unrelated to uplink channel quality, preempts the scheduling decision being based on uplink channel quality. For example, a detected condition may be when a Doppler frequency of the uplink channel exceeds a threshold. Another example of such a

condition is when the load of a cell corresponding to the base station is less than the threshold.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The two rejections to be reviewed on appeal are the obviousness rejections based on (1) the combination of Labonte and Neumiller and (2) the combination of Garceran and Neumiller.

VII. ARGUMENT

A. The Labonte Reference Lacks Multiple Claim Features From The Independent Claims

Labonte describes a method for selecting between different modulation levels for transmitting packet data in a cellular system. More particularly, Labonte relates to a D-AMPS+ system which includes a low-level modulation packet control channel, a high-level modulation packet control channel, a low-level modulation packet traffic channel, and a high-level modulation packet traffic channel. Labonte provides a method for selecting and transitioning between the low-level and high-level modulation packet control/traffic channels. The Examiner relies specifically on column 7, which describes the mobile station optionally receiving from the base station a signal quality measurement of the uplink channel. The mobile decides "whether the signal quality uplink and downlink is sufficient for packet data communications." There is no intentional delay in transmitting packets over a downlink channel. Rather, Labonte elects to transmit using low-level modulation when a channel condition is poor.

Regarding the independent claims, the Examiner admits that Labonte fails to disclose that the feedback signaling "is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel." The Examiner further admits that Labonte also does not teach "delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold."

B. Neumiller Does Not Disclose the Independent Claim Features Missing From McHale

Neumiller describes assigning a frame quality indicator to each frame received by a base station and forwarding those indicators to a decision-making entity in a call anchoring base station to select which of plural base stations has the best frame quality indicator (FQI). Once the anchoring base station determines the base station with the received frame having the best FQI, the anchoring base station sends a "forward frame" message to that base station. That base station then forwards that frame to a switch 101 which routes the frame. See the Abstract and column 2, lines 30-45 of Neumiller.

Neumiller makes only a passing reference to ARQ in column 4, lines 3-5, explaining that the frame quality indicator is "preferably quality bits from the forward error correction (FEC) function that is used on the radio channel. The FEC function may or may not involve an additional automatic repeat request (ARQ) on the link." But a retransmission or feedback protocol like ARQ is an essential feature of the independent claims. It is not an optional throw-away feature like it is in Neumiller. So it is not

surprising that there is no teaching in Neumiller of determining the condition of the channel which carries the ARQ feedback as claimed.

In addition, Neumiller also fails to teach "delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold." The delay circuitry 205 in Figure 2 referred to by the Examiner is not relevant to the claimed delay. First, the claimed delay is a an affirmative act in the transmitter, i.e., the transmitting node delays transmitting data packets that could otherwise be transmitted. It is not a delay that occurs in the receiver. This is readily apparent just viewing Figure 2 in which all arrows point in the "receive" direction from the remote unit 113. The delay block 205 clearly is delaying information intended for the selector 207, which is part of the frame <u>receive</u> processing. That delay has nothing to do with transmission.

Second, Neumiller does not teach delaying transmission scheduling over a downlink channel. The delay is for the purpose of determining the best uplink frame received amongst the base stations involved in the soft handover. Neumiller discloses at column 5, lines 22-30:

> delay circuitry 205 serves to delay frames for an amount of time so that frames from all base stations in soft handoff with remote unit 113 enter selector 207 simultaneously. Selector 207 determines an FQI for the received frame and receives FQI information for the frame from base stations in soft handoff with remote unit 113 via the FQI_SIDEHAUL message. Selector 207 then selects the base station with the best FQI from all base stations involved in soft handoff with remote unit 113.

Nothing in this text relates to delaying transmission of data packets from Neumiller's base station over a radio channel to the remote radio unit 113.

Third, the delay in block 205 does not relate to detecting a signal condition of the ARQ feedback channel. Nor is the delay even related to the content of an ARQ signal. Rather, the delay circuitry 205 delays frames for an amount of time so that frames from all base stations in soft handover with a particular mobile enter the frame selector 207 simultaneously.

Thus, even if the combination of Labonte and Neumiller could be made as the Examiner proposes, that combination still lacks:

- the feedback signal is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel.
- delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold.

For either or both of these two independent reasons, the obviousness rejection based on Labonte and Neumiller should be reversed.

C. <u>The Combination of Labonte and Neumiller Is Based On Improper Hindsight</u>

The Examiner uses improper hindsight to combine Labonte and Neumiller in a failed attempt to show the two claim features bulleted above. Labonte's solution to poor channel quality is to use low-level modulation—not to delay transmission. Labonte is not concerned with scheduling when to transmit data packets to ensure that ARQ feedback

signals are received reliably. Neumiller delays received frames to make sure that the best received frame from all base stations involved in the soft handoff is forwarded to switch 101 for processing.

But Neumiller's receiver processing delay has nothing do with data packet transmission scheduling over a first channel that takes into account the quality of the opposite direction channel. In the non-limiting, example situation in which the scheduling is for a downlink channel, a determination is made of the uplink channel quality. If the uplink channel quality is poor, for example, due to fast fading or the like, it is better to delay sending data from the base to that mobile station until the quality on the uplink in the mobile station to the base station improves. Neumiller simply does not disclose or even contemplate this kind of radio transmission scheduling decision making.

A proper motivation to combine requires an appreciate of the desirability of making the combination. It is not measured by the feasibility of making the combination. See *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 (Fed. Cir. 2000). The Examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and no knowledge of the claimed invention, would select the elements from the cited prior art references for the combination in the manner claimed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). The Examiner fails to make such a showing in this case. The obviousness rejection is improper on this ground as well.

D. <u>The Combination of Garceran and Neumiller Fails to Teach Claim Features Recited in the Independent Claims</u>

Garceran discloses a method to determine wireless coverage using geographic location coordinate information received from a mobile unit. Particularly, the Examiner relies on the text in column 3, which describes the radio network using various information including uplink and downlink signal quality measurements to the RF coverage for a particular geographical location. Lines 12-25 state:

> The RF coverage system obtains location information for the wireless unit, which includes position, such as latitude/longitude, and can include time, speed, distance and/or direction. While a wireless unit is communicating with a base station, the RF coverage system can dynamically determine RF coverage using the location information from the wireless unit in association with additional information and/or measurements, such as signal quality measurements which can include received signal strength (RSSI), bit error rate (BER) and/or frame error rate (FER), made at the wireless unit and/or at the receiving base station(s), and/or other information or parameters, such as operating conditions, mobile identity, traffic load, frequency, speed, direction, time and/or mobile type.

Garceran further explains that the serving base station can periodically receive "associated information from the wireless unit 54" including signal quality measurements of the base station's transmit signal and that the base station 56 can perform signal quality measurements of the received signal from the wireless unit 54.

The Examiner states that Garceran does not disclose "employing the ARQ protocol by the base station to provide reliable communications with the wireless user, where the ARQ feedback is an acknowledge, negative acknowledge or lost signal determined to be sufficient when the probability of reception error is below an error

threshold." The Examiner further admits that "Garceran also does not explicitly show delaying data transmission over the downlink until the uplink signal quality is sufficient or [sic] for a preset period of time." So Garceran is missing the same two features that Labonte is missing.

Appellants have already demonstrated that Neumiller does not teach these missing features. Accordingly, the obviousness rejection based on Garceran and Neumiller should be reversed.

E. The Combination of Garceran and Neumiller Is Based On Improper Hindsight

The Examiner's attempt to combine Neumiller with Garceran is at best a hindsight "forced" attempt to reconstruct the claimed subject matter, as explained in section C above. Delaying specific frames so that the frames from all base station involved in a soft handover with a particular mobile enter into a frame selector simultaneously is not the same thing as delaying transmission of data packets over a first channel (e.g., a downlink channel) until the quality of a second channel (e.g., an uplink channel) exceeds a predetermined threshold. Neumiller's delay relates to selecting the best received packet in soft handover and is completely unrelated to the problem of scheduling data packets to be transmitted to ensure that ARQ feedback signals are received reliably. The obviousness rejection based on Garceran and Neumiller should also be reversed for lack of proper motivation to combine.

F. Dependent Claim Features Are Patentable For Additional Reasons

Thus, there are multiple reasons why the rejections of the independent claims are improper. And there are a number of dependent claim features which are also not disclosed or suggested by the applied references.

Regarding claims 3, 16, 28, and 41, none of the references teaches the first node controlling transmission of data packets over the first channel based on both a determined condition for the first channel and a determined condition for the second channel. Although there may be disclosure of determining conditions of opposite direction first and second channels, the Examiner fails to point out where the transmission over the first channel in any of the applied patents is based on conditions on both the first and second channels.

Regarding claims 4, 17, 31, and 42, none of the references teaches determining whether the condition of the second channel is sufficient for the first node to accurately receive a feedback signal from the second node. The Examiner fails to identify any text in Labonte or Garceran that teaches this feature. Determining signal quality of a channel does not mean that there is a determination that a transmitting node will be able to accurately receive a feedback signal.

Regarding claims 5, 18, 32, and 43, none of the references teaches determining the sufficiency of the condition of the second channel to ensure that a probability of error in the received feedback signal is below an error threshold. The Examiner refers to column 3 in Garceran. But here Garceran simply teaches that a threshold comparison can trigger the base station sending a request for mobile location and related information.

This is not the same as checking whether the quality of the feedback channel is good enough so the probability of error in a received feedback signal (admitted by the Examiner not to be present in Garceran) is below an error threshold.

Regarding claims 13, 23, 37 and 48, none of the references teaches detecting another condition and controlling the data packet transmission over the first channel without regard to the condition of the second channel when the other condition is detected. The fact that multiple conditions can be detected in Garceran is only part of what is claimed. The Examiner fails to establish whether Garceran teaches controlling the data packet transmission over the first channel *without regard to the condition of the second channel* when some other condition is detected.

Regarding claims 24, 49 and 25, 50, the Examiner can not point out where any of the other detected conditions in Garceran is when a Doppler frequency of the uplink channel exceeds a threshold (24, 49) or when a load of a cell corresponding to the base station is less than a threshold (25, 50). These explicitly claimed features are just not taught.

VIII. CONCLUSION

Multiple features of the independent claims are not disclosed or suggested by the combination of Labonte and Neumiller or by the combination of Garceran and Neumiller. There is no proper motivation to combine their teachings as the Examiner proposes. Each missing claim feature and the lack of motivation for each combination is an independent ground for reversal. The Board should reverse the outstanding rejections.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: ______________________
John R. Lastova
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JRL/sd
Enclosures
Appendix A - Claims on Appeal

IX. CLAIMS APPENDIX

1. In a system where data packets are communicated from a first node over a first channel to a second node and a feedback signal is sent back to the first node from the second node over a second channel, a method comprising:

the first node determining a condition of the second channel, and

based on the determined condition of the second channel, the first node controlling transmission of data packets over the first channel including delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold,

wherein the feedback signal is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel.

2. The method in claim 1, wherein the first node schedules the transmission of data packets over the first channel based on the determined condition of the second channel.

3. The method in claim 1, further comprising:

the first node determining a condition of the first channel, and

based on the determined condition of the first and second channels, the first node controlling transmission of data packets over the first channel.

4. The method in claim 1, further comprising:

the first node determining whether the condition of the second channel is sufficient for the first node to accurately receive a feedback signal from the second node.

5. The method in claim 3, wherein the sufficiency of the condition of the second channel is determined so that a probability of error in the received feedback signal is below an error threshold.

6. The method in claim 7, wherein the predetermined threshold is a signal-to-interference ratio (SIR).

7. The method in claim 7, further comprising:

transmitting the data packets after a preset delay period expires.

8. The method in claim 1, wherein the first node is a base station in a radio communications network and the second node is a wireless user equipment unit, and wherein the first channel is a downlink radio channel and the second channel is an uplink radio channel.

9. The method in claim 1, wherein the first node is a wireless user equipment unit in a radio communications network and the second node is a base station, and wherein the first channel is an uplink radio channel and the second channel is a downlink radio channel.

10. The method in claim 1, wherein the first node is a radio network controller coupled to one or more base stations in a radio communications network and the second node is a wireless user equipment unit.

11. The method in claim 1, further comprising:

detecting another condition, and

controlling the data packet transmission over the first channel without regard to the condition of the second channel when the other condition is detected.

12. In a mobile communications system where data packets are communicated between one or more base stations and wireless user equipment units over a radio interface, a method implemented in one of the base stations, comprising:

determining a signal quality of an uplink channel from the wireless user equipment to the base station, and

scheduling transmission of data packets over a downlink channel from the base station to the wireless user equipment taking into on the determined quality of the uplink channel including delaying transmission of data packets over the downlink channel until the quality of the uplink channel exceeds a predetermined threshold,

wherein the feedback signal is an acknowledge (ACK) signal, a negative acknowledge (NACK) signal, or a lost signal corresponding to a data packet transmitted over the first channel.

13. The method in claim 14, wherein the signal quality is a signal-to-interference ratio (SIR).

14. The method in claim 14, further comprising:

determining a signal quality of the downlink channel, and

based on the determined signal quality of the uplink and downlink channels, scheduling transmission of data packets over the downlink channel.

15. The method in claim 14, wherein the base station employs an automatic repeat request (ARQ) protocol to provide reliable data packet communications with the wireless user equipment, the method further comprising:

determining whether the signal quality of the uplink channel is sufficient for the base station to accurately receive an ARQ feedback signal from the wireless user equipment.

16. The method in claim 17, wherein the sufficiency of the signal quality of uplink channel is determined so that a probability of error in the received ARQ feedback signal is below a threshold.

17. The method in claim 20, further comprising:

transmitting the data packets after a preset delay period expires.

18. The method in claim 14, wherein the wireless user equipment is communicating with two base stations in a soft handover communication.

19. The method in claim 14, further comprising:

detecting a predetermined condition, and

scheduling the downlink data packet transmission without regard to the uplink channel signal quality when the predetermined condition is detected.

20. The method in claim 23, wherein the detected condition is when a Doppler frequency of the uplink channel exceeds a threshold.

21. The method in claim 23, wherein the detected condition is when a load of a cell corresponding to the base station is less than a threshold.

22. A first communications unit for communicating data packets over a first channel to a second communications unit, where the second communications unit sends a feedback signal to the first communications unit over a second channel, the first communications unit comprising:

a detector capable of determining a condition of the second channel, and

a controller capable of controlling transmission of data packets over the first channel based on the determined condition of the second channel,

wherein the controller includes a scheduler capable of delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold, and

wherein the feedback signal is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel.

23. The communications unit in claim 26, wherein the controller includes a scheduler capable of scheduling transmission of data packets over the first channel based on the determined condition of the second channel.

24. The communications unit in claim 26, further comprising:

a detector capable of determining a condition of the first channel,

wherein the controller is capable of scheduling transmission of data packets over the first channel based on the determined conditions of the first and second channels.

25. The communications unit in claim 29, wherein the predetermined threshold is a signal-to-interference ratio (SIR).

26. The communications unit in claim 26, wherein the controller is capable of determining whether the condition of the second channel is sufficient for the first communications unit to accurately receive a feedback signal from the second communications unit.

27. The communications unit in claim 31, wherein the sufficiency of the condition of the second channel is determined so that a probability of error in the received feedback signal is below a threshold.

28. The communications unit in claim 26, wherein the first communications unit is a base station in a radio communications network and the second communications unit is a wireless user equipment unit, and wherein the first channel is a downlink radio channel and the second channel is an uplink radio channel.

29. The communications unit in claim 26, wherein the first communications unit is a wireless user equipment unit in a radio communications network and the second communications

unit is a base station, and wherein the first channel is an uplink radio channel and the second channel is a downlink radio channel.

30. The communications unit in claim 26, wherein the first communications unit is a radio network controller coupled to one or more base stations in a radio communications network and the second communications unit is a wireless user equipment unit.

31. The communications unit in claim 26, further comprising:

another detector capable of detecting another condition,

wherein the controller is capable of controlling the data packet transmission over the first channel without regard to the condition of the second channel when the other condition is detected.

32. A mobile radio communications system incorporating the communications unit of claim 26.

33. A mobile communications system, comprising:

one or more base stations;

wireless user equipment units communicating data packets with one or more base stations over a radio interface,

wherein each base station includes:

a first detector configured to determine a signal quality of an uplink channel from the wireless user equipment to the base station, and

a data packet scheduler configured to schedule transmission of data packets over a downlink channel from the base station to the wireless user equipment taking into account the determined quality of the uplink channel,

wherein the scheduler is configured to delay transmission of data packets over the downlink channel until the quality of the uplink channel exceeds a predetermined threshold, and

wherein the feedback signal is an acknowledge (ACK) signal, a negative acknowledge (NACK) signal, or a lost signal corresponding to a data packet transmitted over the downlink channel.

34. The mobile communications system in claim 39, wherein the signal quality is a signal-to-interference ratio (SIR).

35. The mobile communications system in claim 39, the base station further including:

a second detector configured to determine a signal quality of the downlink channel,

wherein based on the determined signal quality of the uplink and downlink channels, the scheduler is configured to schedule transmission of data packets over the downlink channel.

36. The mobile communications system in claim 39, wherein the one base station is configured to employ an automatic repeat request (ARQ) protocol to provide reliable data packet communications with the wireless user equipment and to determine whether the signal quality of the uplink channel is sufficient for the base station to accurately receive an ARQ feedback signal from the wireless user equipment.

37. The mobile communications system in claim 42, wherein the sufficiency of the signal quality of uplink channel is determined so that a probability of error in the received ARQ feedback signal is below a threshold.

38. The mobile communications system in claim 45, wherein the base station is configured to transit the data packets after a preset delay period expires.

39. The mobile communications system in claim 39, wherein the wireless user equipment is communicating with two base stations in a soft handover communication.

40. The mobile communications system in claim 39, the base station further including:

a third detector configured to detect a predetermined condition, wherein the schedule is configured to schedule the downlink data packet transmission without regard to the uplink channel signal quality when the predetermined condition is detected.

41. The mobile communications system in claim 48, wherein the detected condition is when a doppler frequency of the uplink channel exceeds a threshold.

42. The mobile communications system in claim 48, wherein the detected condition is when a load of a cell corresponding to the base station is less than a threshold.

X. EVIDENCE APPENDIX

There is no evidence appendix.

XI. RELATED PROCEEDINGS APPENDIX

There is no related proceedings appendix.